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family containing the genera *Balanites*, *Agialida*, and *Agiella* (new); the same author (*idem* 261-271) also breaks up the Boraginaceae into 4 families, Boragaceae, Ehretiaceae, Cordiaceae, and Heliotropiaceae.—C. V. PIPER (Contrib. U. S. Nat. Herb. **10**:1-48. pls. 1-15. 1906), in a revision of N. Am. species of *Festuca*, recognizes 34 and describes 3 as new.—A. A. HELLER (*Muhlenbergia* **2**:177-256. 1906), in an account of botanical exploration in California during 1906, in which numerous species are noted and nomenclatural changes made, describes new species in *Taxiscordion*, *Eriogonum* (2), *Mirabilis*, *Lupinus* (4), *Hesperastragalus*, *Anogra*, *Chylisma*, *Phlox*, *Phacelia*, *Conanthus*, *Cryptanthe* (2), *Amsinckia*, *Pentstemon* (2), and *Orthocarpus*.—PHILIP DOWELL (Bull. Torr. Bot. Club **33**:547-556. pls. 18-22. 1906), in a revision of N. Am. species of *Calceolaria*, recognizes 16 and describes 6 as new.—J. M. C.

**Formative influence of light.**—PEIRCE has extended his studies on irritability in plants from algae to liverworts and ferns, recording the effect of light upon germination and early growth in *Anthoceros fusiformis*, *A. Pearsoni*, *Fimbriaria californica*, and *Gymnogramme triangularis*, and its effect on form in later stages of growth.<sup>23</sup> He finds that germination is dependent upon light of undetermined intensity, and that direction of growth and of successive cell division is determined by the direction of light. The direction of light also profoundly modifies the form of the thalli of the liverworts. This was most marked in *Anthoceros*. On a clinostat they tend to become solid, erect, and cylindrical, conic or vasiform, with radial structure instead of dorsiventral. The author holds that his early results support the hypothesis that, aside from what is actually transmitted from parents to offspring, likeness is due to likeness or identity of the physical environment, and that these factors are as essential determinants as the substance transmitted. Unfortunately PEIRCE'S experiments were interrupted by the earthquake of April 16, so that conclusive tests have not been made in all cases. The work will be continued.—C. R. B.

**Assimilation of organic acids by algae.**—An interesting contribution to our knowledge of the power of assimilation of carbon compounds by autotrophic plants has been made by TRÉBOUX.<sup>24</sup> This investigator experimented with some forty species of the lower algae, testing their power of assimilating various organic acids, which were given in the form of potassium or ammonium salts. Cultures were kept in absolute darkness. It was found that about one-half of the species flourished under the cultural conditions with an organic acid as the only source of carbon; and that of all the acids used acetic acid was most readily assimilated, while acids with larger carbon chains were assimilated in only a few cases. In some cases aminoacids were used with accompanying escape of ammonia. This

<sup>23</sup> PEIRCE, G. J., Studies of irritability in plants. *Annals of Botany* **20**:449-465. pl. 35. 1906.

<sup>24</sup> TRÉBOUX, O., Organische Säuren als Kohlenstoffquelle bei Algen. *Ber. Deutsch. Bot. Gesells.* **23**:432-441. 1906.

work contributes additional evidence showing that the line between autotrophic and heterotrophic nutrition is not so sharply drawn as is generally supposed. The power of the lower algae to use carbon compounds and especially the lower acids explains the abundant growth of those forms where decaying organic matter is present, as in contaminated waters.—H. HASSELBRING.

**Rhizomorphic root-rot of vine.**—MAGNUS<sup>25</sup> describes a rhizomorphic root-rot of the vine which causes the death of numerous plants in the vineyards of certain regions of Europe. The rhizomorphs are white strands which may attain a diameter of 2<sup>mm</sup>. The strands lack a well-developed cortex, thereby differing from the characteristic strands of *Armillaria mellea*. The fungus is found to be abundant on the posts used as supports for the vines. From the posts the strands spread to the young roots of the vine, entwining and killing them. Although this disease with the accompanying rhizomorphs had been known for several years, it was not until the present year that the connection of the rhizomorphs with one of the Hymenomycetes was established by finding numerous sporophores of *Collybia platyphylla* growing from the strands. As this fungus is very common in America, it is not unlikely that it may be connected with one of the numerous rhizomorphic root-rot diseases infecting our fruit trees.—H. HASSELBRING.

**Segregates of *Rhus glabra*.**—GREENE<sup>26</sup> has studied the forms referred to *Rhus glabra* throughout its reputed range. He remarks that "there is no one species of tree or shrub of any continent that really holds the geographic range which the books and lists ascribe to *Rhus glabra*;" and points out the exceedingly diverse areas it is said to occupy in its continental distribution. Accordingly he has begun its segregation on the basis of such herbarium material as is available, recognizing the fact that this is probably a very scanty showing of the real situation, for "no special call has been made for collecting these shrubs from different regions." The form chosen to stand for the original *R. glabra* L. is one ranging from eastern Virginia and southern Maryland through southern Pennsylvania to Connecticut. Outside of that region botanists will have to refer their reputed forms of *R. glabra* to other species. This initial work of segregation has resulted in 29 species, 24 of which are new.—J. M. C.

**Transpiration.**—ARESCHOUG maintains the correctness of his view that the palisade tissue, when well developed and compact, reduces transpiration,<sup>27</sup> explaining away certain apparently contradictory experiments of HESSELMAN and others.

It seems to be about time to dismiss the idea of transpiration as a function,

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<sup>25</sup> MAGNUS, P., Ueber eine Erkrankung des Weinstockes. Ber. Deutsch. Bot. Gesells. **24**:402-406. 1906.

<sup>26</sup> GREENE, EDWARD L., A study of *Rhus glabra*. Proc. Wash. Acad. Sci. **8**: 167-196. 1906.

<sup>27</sup> ARESCHOUG, F. W. C., Ueber die Bedeutung des Palisadenparenchyms für die Transpiration der Blätter. Flora **96**:329-336. 1906.